

AMENDMENTS TO THE CLAIMS

This listing of claims will replace all prior versions, and listings, of claims in the application:

Listing of Claims:

- 1 1. (Currently amended) A method for invalidating a resource record
2 in a local cache at a client computer system within a network, comprising:
3 retrieving the resource record from the local cache at the client computer
4 system;
5 issuing one or more queries for the resource record at the client computer
6 system;
7 waiting for a response to the query at the client computer system; and
8 if the response to the query is not received in a pre-determined amount of
9 time and after issuing a predetermined number of queries for the resource record,
10 invalidating the resource record at the client computer system;
11 the method further comprising:
12 receiving a multicast message from a second client querying a
13 second device;
14 locating a second resource record associated with the second
15 device;
16 waiting for a multicast response from the second device to the
17 multicast query; and
18 when a predetermined number of multicast messages from the
19 second client querying the second device have been received without
20 receiving a multicasted response from the second device to the second
21 client, invalidating the second resource record.

1 2-4 (Canceled).

1 5. (Currently amended) The method of claim 1, wherein if the
2 response to the issued query is not received in a pre-determined amount of time,
3 the method further comprises:
4 retrieving a parent record of the resource record at the client, wherein the
5 parent record refers to the resource record;
6 issuing a query for the parent record;
7 waiting for a response to the query from the device; and
8 if the response to the query is not received in a pre-determined amount of
9 time, invalidating the parent record, and then repeating the above process by
10 applying it recursively to any records that refer to the now-invalidated parent
11 record.

1 6. (Currently amended) The method of claim 1, wherein if the
2 response to the issued query is not received in a pre-determined amount of time,
3 the method further comprises:
4 retrieving a parent record of the resource record at the client, wherein the
5 parent record refers to the resource record;
6 issuing a query for the parent record;
7 receiving a response to the query from the device, wherein the response
8 includes information for updating the resource record; and
9 updating the resource record with the information received in the
10 response.

1 7. (Original) The method of claim 6, wherein the method further
2 comprises updating the parent record with the information received in the
3 response.

1 8. (Original) The method of claim 1, wherein the method is invoked
2 at a pre-specified time interval.

1 9. (Currently amended) A computer-readable storage medium storing
2 instructions that when executed by a computer cause the computer to perform a
3 method for invalidating a resource record in a local cache at a client computer
4 system within a network, the method comprising:
5 retrieving the resource record from the local cache at the client;
6 issuing one or more queries for the resource record;
7 waiting for a response to the query; and
8 if the response to the query is not received in a pre-determined amount of
9 time and after issuing a predetermined number of queries for the resource record,
10 invalidating the resource record at the client;
11 the method further comprising:
12 receiving a multicast message from a second client querying a
13 second device;
14 locating a second resource record associated with the second
15 device;
16 waiting for a multicast response to the multicast query; and
17 when a predetermined number of multicast messages from the
18 second client querying the second device have been received without
19 receiving a multicasted response from the second device to the second
20 client, invalidating the second resource record.

1 10-12 (Canceled).

1 13. (Currently amended) The computer-readable storage medium of
2 claim 9, wherein if the response to the issued query is not received in a pre-
3 determined amount of time, the method further comprises:
4 retrieving a parent record of the resource record at the client, wherein the
5 parent record refers to the resource record;
6 issuing a query for the parent record;
7 waiting for a response to the query from the device; and
8 if the response to the query is not received in a pre-determined amount of
9 time, invalidating the parent record, and then repeating the above process by
10 applying it recursively to any records that refer to the now-invalidated parent
11 record.

1 14. (Currently amended) The computer-readable storage medium of
2 claim 9, wherein if the response to the issued query is not received in a pre-
3 determined amount of time, the method further comprises:
4 retrieving a parent record of the resource record at the client, wherein the
5 parent record refers to the resource record;
6 issuing a query for the parent record;
7 receiving a response to the query from the device, wherein the response
8 includes information for updating the resource record; and
9 updating the resource record with the information received in the
10 response.

1 15. (Original) The computer-readable storage medium of claim 14,
2 wherein the method further comprises updating the parent record with the
3 information received in the response.

1 16. (Original) The computer-readable storage medium of claim 9,
2 wherein the method is invoked at a pre-specified time interval.

1 17. (Currently amended) An apparatus that invalidates a resource
2 record in a local cache at a client computer system within a network, comprising:
3 a retrieval mechanism at the client configured to retrieve the resource
4 record from the local cache at the client; and
5 an invalidation mechanism configured to,
6 issue one or more queries for the resource record,
7 wait for a response to the query, and
8 if the response to the query is not received in a pre-determined
9 amount of time and after issuing a predetermined number of queries for
10 the resource record, to invalidate the resource record at the client, and
11 the invalidation mechanism further configured to:
12 receive a multicast message from a second client querying a
13 second device;
14 receive a second resource record associated with the second device
15 from the retrieval mechanism in response to receiving the multicast
16 message;
17 wait for a multicast response to the multicast query; and
18 when a predetermined number of multicast messages from the
19 second client querying the second device have been received without
20 receiving a multicasted response from the second device to the second
21 client, invalidating the second resource record.

1 18-20 (Canceled).

1 21. (Currently amended) The apparatus of claim 17, wherein if the
2 response to the issued query is not received in a pre-determined amount of time,
3 the invalidation mechanism is additionally configured to:

4 retrieve a parent record of the resource record at the client, wherein the
5 parent record refers to the resource record;
6 issue a query for the parent record;
7 wait for a response to the query from the device; and
8 if the response to the query is not received in a pre-determined amount of
9 time, to invalidate the parent record, and to then repeat the above process by
10 applying it recursively to any records that refer to the now-invalidated parent
11 record.

1 22. (Currently amended) The apparatus of claim 17, further
2 comprising an updating mechanism, wherein if the response to the issued query is
3 not received in a pre-determined amount of time, the updating mechanism is
4 configured to:

5 retrieve a parent record of the resource record at the client, wherein the
6 parent record refers to the resource record;
7 issue a query for the parent record;
8 receive a response to the query from the device, wherein the response
9 includes information for updating the resource record; and to
10 update the resource record with the information received in the response.

1 23. (Original) The apparatus of claim 22, wherein the updating
2 mechanism is additionally configured to update the parent record with the
3 information received in the response.

1 24. (Original) The apparatus of claim 17, wherein the apparatus is
2 invoked at a pre-specified time interval.

1 25–34 (Canceled).

1 35. (Previously Presented) The method of claim 1 wherein invalidating
2 the resource record further comprises invalidating a child resource record of the
3 resource record.

1 36. (Previously Presented) The computer-readable storage medium of
2 claim 9, wherein invalidating the resource record further comprises invalidating a
3 child resource record of the resource record.

1 37. (Previously Presented) The apparatus of claim 17, wherein
2 invalidating the resource record further comprises invalidating a child resource
3 record of the resource record.

1 38-39 (Canceled).

1 40. (Previously presented) A method for validating a resource record
2 in a local cache at a client computer system, comprising:
3 receiving a request to use a service;
4 looking up a service record for the service in a cache;
5 looking up an address record referenced by the service record and using a
6 host address and a port number in the address record to send a query to the service
7 on the network;
8 if the service responds within a predetermined time, using the service;
9 if the service does not respond within the predetermined time, resending
10 the query to the service until the service responds, at which time the service is
11 used, or until a predetermined number of queries has been sent;
12 upon sending the predetermined number of queries without receiving a
13 response, marking the address record referenced by the service record as suspect,
14 and querying for a new address record for the service by:

15 sending a multicast query requesting the address record on the
16 network and waiting a predetermined time for a response;
17 if the service responds, updating address record with address
18 information included in the response;
19 if the service does not respond after a predetermined time and after
20 resending the query a predetermined number times:
21 deleting the address record.
22 marking the service record as suspect; and
23 sending a multicast query for the service record on the
24 network and waiting for a response;
25 if a response is received, updating the cache and using the
26 service;
27 otherwise, if no response is received, deleting the service
28 record from the cache.